Genericity in Middle Constructions*

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In middle constructions the external argument is syntactically inactive, but is understood to be people in general. But controversially it is optionally realized as a *for*-phrase which can denote a specific individual. I propose that a *for*-phrase is indirectly associated with the implied agent. However, this does not explain the observation that middle constructions tend to be generic. A middle verb itself is aspectually non-generic, but a middle construction is generic as a whole. This requires the presence of the generic operator. One thing missing is how a middle construction is guaranteed to be generic. I propose that the event argument is given the feature [ANY], which must be associated with the generic operator. My proposal could cause some problems in semantic interpretation, and I show that they can be avoided by existential disclosure.

Key words: middle, generic, existential disclosure, implicit argument

1. Introduction

Verbs are roughly classified into transitives, intransitives, and unaccusatives, depending on whether they take an external argument, and whether they have an internal direct argument, in addition to the external argument.[1]

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1) In the traditional descriptive grammar, the term "intransitive" is used in a more broad sense. That is, it may refer to intransitives and unaccusatives. In this paper, I use the term "unaccusative" in a more broad sense. There is some difference between the verb *arrive* and the verb *sink*. The term "unaccusative" is used to refer to verbs like *arrive*. These verbs allow *there*-construction, which motivates the assumption that the surface subjects occur after the verbs in D-structure. Verbs like *sink* have a causative counterpart which assigns accusative case. And even when they occur with only one argument realized, they do not allow *there*-construction. This motivates the assumption that the only argument is regarded as the external argument. Noting this difference, verbs like *sink* are

(1) a. John drives a car.
b. John ran.
c. John arrived.

The verb *drive* is a transitive verb, the verb *run* an intransitive and the verb *arrive* an unaccusative. The distinction could be made structurally as well as in terms of their argument structures, because all arguments in the argument structure are projected to the syntactic structure, following the projection principle.

Middle verbs do not seem to follow the projection principle strictly. They are generally assumed to have external arguments which are not realized in the syntax.

(2) This car drives well.

Even though the external argument of *drive* is not realized, this sentence does not mean that the car drives itself. It means that whoever drives the car, it moves well as the driver intends it to do. This implies that middles are semantically transitive verbs, even though they behave syntactically like intransitives or unaccusatives. For this reason, it is assumed that middles are derived from transitives. In some sense, they are in the "middle" between transitives and intransitives/unaccusatives.[2)]

Middle verbs are "middle" in another sense. Most transitive verbs can be used in active forms or passive forms.

(3) This car is driven by a car-racer.

Compared with the sentences in (1a) and (3), sentence (2) seems like a passive in its meaning, but the verb has the active form. In this sense middles are in the "middle" between actives and passives. Peculiar properties of middle constructions are hard to explain because of the dual properties.

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called ergatives. But there is another tradition in which both types are called unaccusative. In this paper, I am not concerned with how ergatives are analyzed, so I will also call them unaccusative.

2) In middle constructions, the subjects are internal arguments of the corresponding transitive verbs, but they may be realized as external arguments or internal arguments in the syntax. Analyses of middle formation can be grouped into two in relation to either option. I will discuss this further below.

One peculiar property of middle constructions is that middles tend to be generic. Fagan (1988) attributes this property to the existence of the generic external argument. She claims that the external argument of a middle verb has arbitrary reference and that this arbitrariness makes the middle construction generic. But this is not empirically supported. In this paper, I am going to claim that generic nature of middle constructions should be accounted for by lexical and syntactic processes. Middle verbs themselves are not inherently generic. But they must be bound by the generic operator. More specifically, the event argument is bound by the existential operator in the lexicon, but the operator is licensed by a generic operator, just as a negative polarity item is licensed by some operator which licenses it.

The paper goes in the following order. In section 2, I will compare middles with unaccusatives in order to show what properties middles have. In doing this, it is necessary to draw a strict line between middles and unaccusatives. I claim that middles have implicit external arguments, and that middle constructions are generic. In section 3, it will be shown that the implicit external argument may be expressed by a *for*-phrase, and that the *for*-phrase is not really generic, as Fagan (1988) claims. Here one controversial issue is whether the *for*-phrase is the direct realization of the external argument. I claim that it is indirectly associated with the external argument. In section 4, I show that middle verbs themselves denote specific events. This leads to the idea that genericity of middle constructions should be explained by lexical and syntactic processes. To implement this idea, I use Dynamic Montague Grammar in section 5, where I show how generic sentences are interpreted as generic.

2 . Middles and Unaccusatives

One of the ways to characterize middle constructions is to compare them with unaccusatives because they both are derived from transitives. The verb *break* can be used as a transitive, an unaccusative, and a middle. This is illustrated below:

(4) a. John broke his leg.
b. The bottle broke.
c. The bottle breaks easily.

The verb *break* in (4b) and (4c) is derived from the transitive verb in (4a), but there is no difference in their forms. The only difference lies in their semantics. In (4b), we do not assume that there was someone who broke the bottle. Sentence (4c), on the other hand, means that whoever tries to break the bottle, it is broken easily by him/her.[3]

Keyser and Roeper (1984) argue that the phrase *all by itself/themselves* is not compatible with the middle's implicit agent. This is illustrated in the following:

(5) a. *French books read all by themselves.
b. *This wood carves easily all by itself.

The verbs *read* and *carve* imply the existence of the agent, so the use of *all by itself/themselves* is not allowed. Since unaccusatives do not have such implied agents, they are expected to come with the adverbial.

(6) a. The door opens all by itself.
b. Milk chocolate melts all by itself.

The verbs *open* and *melt* are used as unaccusatives together with *all by itself/themselves.*

Rapoport (1999) regards the sentences in (6) as middles, and claims that some middles do not have implied agents.[4] Rapoport claims that agents

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3) The verb in (4c) also can be understood as an unaccusative. Fellbaum (1986) also makes this point. The following sentence can have two readings.

(i) The door closes.

One reading is a middle construal, which implies an agent. In this reading, it asserts the possibility of the door being closed by an agent. As an inchoative or an unaccusative, the sentence simply describes the changing of the door's state from open to closed. In this reading, the sentence does not necessarily imply a human agent, but possibly suggests an external cause such as a draft in the room.

4) According to this analysis, a verb which can be used with *all by itself* does not allow a *for*-PP, which Stroik (1992) claims to be the realization of the implied agent. Rapoport takes the following sentences for example:

(i) a. These comic books sell (easily) all by themselves.
b. *These books don't sell for the average shopkeeper.

But the following sentences do not support the claim.

(ii) a. These kinds of books just don't sell for any shopkeeper.
b. These books won't sell for the average shopkeeper.

It is not clear yet what role the negative polarity item *any* and the modal auxiliary *will*

are implied by verbs which have an inherent instrument or manner (I/M) component. The verbs in (6) lack this component, and they are generally taken to be unaccusatives. Then a question arises as to what the difference is between middles and unaccusatives. Middle constructions in general are generic sentences. But genericity is not itself a criterion of middles. Unaccusative verbs also can be used generically. Even Rapoport himself says that a middle verb which can be used with *all by itself* can be used as an unaccusative, but it is not made clear what distinguishes middles from unaccusatives.

Fellbaum (1986) also notes that sometimes middles can be used as unaccusatives. For these cases, he proposes a test. Fellbaum claims that middles and unaccusatives are distinguished by their relative positions with respect to adverbs. The following sentences are middles.

(7) a. The car drives easily.
b. *The car easily drives.
c. The meat cuts nicely/easily.
d. *The meat nicely/easily cuts.

These sentences show that middle verbs cannot be preceded by adverbs. This is contrasted with unaccusatives:

(8) a. The shutters easily close.
b. Brass easily oxidizes.

Fellbaum assumes that there are two distinct adverbs, *easily*$_1$ and *easily*$_2$. The first is one used in middles and the second in unaccusatives. Of course, one verb can come with either of them. Verbs like *float, collapse* and *close* are such examples. Even in these cases, Fellbaum claims, they are different in meaning. *Easily*$_1$ means 'with ease' or 'with no difficulty' while *easily*$_2$ 'without much causation'. Only the former implies an agent of an event.[5]

play, but the verb *sell* comes with a *for*-PP.

5) Fellbaum (1986) assumes that middle constructions are close to *Tough*-constructions in their meanings. He claims that only a sentence with *easily*$_1$ can be paraphrased with a *tough* movement sentence.

(i) The door closes *easily*$_1$.

If verbs without implied agents are taken to be middles, the distinction between middles and unaccusatives becomes groundless. I take a middle to be a verb which has an implied agent. This is what traditional analyses of middle constructions have assumed. When a middle verb comes with *all by itself/themselves*, it is not a middle but an unaccusative.

An additional test is to use a verb in denoting a specific event at a specific time. A middle construction is used to express a disposition of the subject. That is why middles generally come with simple present tense.

(9) a. Chickens kill easily.
b. *Chickens are killing.
c. ?The chickens killed this morning.

(10) a. The mayor bribes easily.
b. ?*The mayor bribed yesterday, according to the newspaper.

The middle verbs in (9b-c) and (10b) are not natural with progressive or past tense with a specific time reference. On the other hand, unaccusatives can occur with a progressive aspect or past tense which refers to a specific point of time.

(11) a. The door closed early this morning.
b. The vase broke yesterday.
c. The boat is sinking now.

Progressive and past tense with specific time reference are, however, not a infallible test. It is also well-known that middles sometimes are used with progressive aspect or past tense with specific time reference.

(12) a. The truck is handling smoothly. (Fellbaum, 1986, p. 4)
b. The stakes you bought yesterday cut like butter.
c. The paint we were persuaded to buy sprayed on evenly.

These sentences apparently seem to pose a serious problem in analyzing middle constructions as expressing genericity. But we need to look at the

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= 'The door is easy to close.'

examples more closely. Progressive aspect can express a dispositional meaning, and (12a) can be construed as expressing a generic property of the truck, even though it is a temporary one. (12b) and (12c) express just specific events of cutting and spraying at specific points of time. The sentences in (12b, c) are true exceptions.

One question is when such exceptions are allowed. I have no clear idea, but one speculation is that the duration in which the property denoted by the verb phrase holds is short due to the property itself. Notice that in (12b-c) the subjects refer to specific entities, and that the predicates denote an event which cannot be repeated. In generic sentences, at least one variable is bound by the generic operator. But in the sentences in (12b-c) there is no variable to be bound. In this case, it is impossible to express genericity. This can be supported by further examples. The following examples are from Iwata (1999, p. 530).

(13) a. ?Yesterday, the mayor bribed easily, according to the newspaper.
b. ??At yesterday's house party, the kitchen wall painted easily.
c. Grandpa went out to kill a chicken for dinner, but the chicken he selected didn't kill easily.
d. The curry digested surprisingly easily last night.

The event of bribing and painting can be repeated on the same object, but the event of killing and digesting cannot. In the latter case the subject must be nonspecific if the whole sentence is to be generic. But in (13c-d) the subjects refer to a specific chicken and curry, and there is no variable to be bound by the generic operator. Only in this case do non-generic middles seem to be allowed.

Similar evidence can be found in the following example:

(14) a. John said Fred killed the chickens easily. (Roberts, 1987, p. 198, fn. 5)
b. John said chickens killed easily.
c. John said the chickens killed easily.

The embedded clause is dependent on the matrix clause in their temporal relation in (14a), but not in (14b). That is, while the event of killing must precede John's saying in (14a), whereas the event of killing may be simultaneous with that of saying in (14b). This is because of the stativity (more precisely, genericity) of the embedded middle. The bare plural form

of the embedded subject is essential for the middle construal. In (14c), the temporal location of the event of killing is dependent on the time of saying: that is, the killing of the chickens precedes John's saying. Notice that killing cannot be repeated for the same object and does not provide a variable to be bound by the generic operator.[6] The subject of the embedded clause does not provide a variable since it refers to a specific group of entities. So the embedded clause in (14c) cannot be used generically, and the event of killing precedes John's saying. In embedded clauses, only when there is a variable to be bound by the generic operator is the clause interpreted as generic.[7]

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6) Even when a middle construction comes with a temporal adverbial denoting a specific time, the property denoted by the verb phrase can be extended beyond the specified time.

(i) Last week, chickens killed nicely.

This sentence has a reading in which chickens being killed nicely can be extended beyond last week. The event denoted by a middle verb also can be extended with respect to space.

(ii) a. *The tent put up in John's backyard and then he invited everyone over for beer.
b. The tent put up in John's backyard so it will put up in yours, too.

In (iia), the sentence is odd because the disposition of the tent being put up is restricted to a specific space. But in (iib) the sentence implies that the disposition of being put up (well) is not restricted to a specific place but extendable to other places. This makes it acceptable.

7) As a test for a middle, one could use the requirement of an adverbial. Middle constructions generally require VP-modifiers:

(i) a. The wall paints *(easily).
b. This language translates *(easily).

In these sentences, the adverb *easily* seems obligatory. However, this seems to be related to informativeness. Some middle verbs can be used without adverbials when they are used with focus, negation, a modal auxiliary, or *any*. Cf. Fellbaum (1986), Roberts (1987) and Yeom (1989).

(ii) a. This belt ADJUSTS.
b. Chickens KILL.
c. CHICKENS kill.
d. This meat DOES cut.
(iii) a. *This meat cuts.
b. This meat doesn't cut.
c. Not many/Few bureaucrats bribe.
(iv) a. *This book sells.
b. This book could sell.
c. Any bureaucrat bribes.

Focus, the negation, modality and *any* can convey extra information in addition to the meaning conveyed by the verbs.
One reviewer points out that middle constructions allow a limited range of adverbials. It is well-known that agent-oriented adverbials are not allowed. This just follows from the observation that middle constructions denote some inherent property of the surface subject. Such a property must not be attributed to any property of the implied agent. From my observation, I speculate that an adverbial is possible only when it can contribute to the

From the discussion so far, I conclude that middles have implied agents, and that middle constructions express generic properties of their surface subjects. Some verbs can be used both as unaccusatives and as middles, but when they are used as middles, implicit agents are involved. To the property of genericity, there are exceptions which can be predicted: they arise when the event variable cannot be bound by the generic operator because the event cannot be repeated for a single individual.

3. Implicit Arguments in Middles

The implied agent of a middle construction was assumed to be inactive in syntax until Stroik (1992) claimed that it can be realized as a *for*-phrase. Evidence for such an assumption is as follows:

(15) a. *The floor waxes easily by John/people.
b. *This car drives carefully.
c. *The book sells well to make money.
d. *This car drives well drunk.

When an agent is realized as an adjunct, it generally becomes a *by*-phrase. This is observed in passives and NPs. In (15a), however, the agent is not allowed to occur as a *by*-phrase. The sentences in (15b-d) contain an agent-oriented adverbial, a rationale clause and a secondary predicate adjunct which requires the external agent, and they are all ungrammatical. From this, it is quite natural to conclude that the external argument of a middle verb must be implicit and inactive in the syntax.

Stroik (1992, 1995, 1999), however, claims that the external argument of a middle can be realized as a *for*-phrase, as follows:

(16) a. Latin texts do not translate easily for Bill (Rapoport, 1999, p. 151)
b. Physics books always read slowly for Lou. (Stroik, 1999. p. 120)
c. Bureaucrats bribe easily for Bill. (Stroik, 1999, p. 121)

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inherent property of the surface subject, though it should be confirmed by further research.

If the *for*-phrase is really the realization of the external argument, then we can say that the external argument is demoted in the sense of Larson (1988).[8]

On the other hand, Zribi-Hertz (1993) and Ackema and Schoorlemmer (1995) argue against this idea. Their main claim is that the *for*-phrase is not the argument of the middle. I suppose that the main reason why they do not accept a *for*-phrase as the realization of the agent is that it is not the normal expression of agent. If the *for*-phrase really expresses the implied agent, a clear explanation must be given to the question why it is not realized as a *by*-phrase. Even Stroik gives no explanation. Ackema and Schoorlemmer (1995) also point out in a footnote that middles with a *for*-phrase are not quite acceptable by all native speakers.

A second reason, which is related to the first, is that a *for*-phrase is not clearly characterized as an argument. Let's look at an example in Ackema and Schoorlemmer (1995, p. 179).

(17) a. That book is too thick for Mary.
b. As far as translation is concerned, no Latin text poses a problem for Bill.

The NPs *Bill* and *Mary* are not arguments of the predicates *pose* and *thick*, respectively. The *for*-phrases seem to be used in relation to the

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8) As I discussed above, Rapoport (1999) claims that a verb with an inherent instrument or manner (I/M) component implies an agent. The implied agent is realized as a *for*-phrase. The following are examples of verbs with an I/M component.

(i) a. (next to a line of poetry) Didn't/Doesn't translate into Polish (for me).
b. This kind of cheese cuts (easily) for experienced cooks.

These are compared with verbs with no I/M component:

(ii) a. *This kind of glass breaks (easily) for our factory workers.
b. *Milk chocolate won't melt for inexperienced cooks. (Rapoport, 1999, p. 153)

Rapoport (1999) mentions in a footnote that these sentences can be grammatical for some, with the *for*-phrases interpreted as experiencer or point-of-view, even in non-generic reading:

(iii) The chocolate melted for me, but not for you.

But as I pointed out in the distinction between middles and unaccusatives, verbs without an I/M component can be regarded simply as unaccusatives. As Rapoport admitted, the use of a *for*-phrase is not a clear test for an implied agent. Verbs like *sell* and *stow* are regarded as middles by other linguists and allow a *for*-phrase. But Rapoport considers them as verbs with no I/M component. In spite of this incongruity, what Rapoport claims is that a *for*-phrase is the realization of the implied agent.

expression *too* in (17a) and the expression *(pose a) problem* in (17b), but they cannot be said to be arguments of any predicate.

This suggests the possibility that a *for*-phrase in a middle construction is not directly related to the middle verb. Zribi-Hertz (1993) argues that *for*-phrases are 'point-of-view' adverbials and modify predicates of evaluative content. In middle constructions, they can be licensed by the evaluative content of the adverbials which come with middle verbs. Note that middle constructions are paraphrased into *tough* constructions in many cases, where *for*-phrases are licensed by the adjectives corresponding to the adverbials.

(18) a. Latin texts translate easily for Bill.
b. Latin is easy (for John) to translate.

It is, however, already mentioned that a middle can be used with no evaluative adverbial. Even in these cases, *for*-phrases are possible.[9]

This leads to a third reason why a *for*-phrase does not seem to be the direct realization of the implicit agent. The use of a modal auxiliary improves the middle sentence with a *for*-phrase.

(19) a. (next to a line of poetry) Didn't/Doesn't translate into Polish (*for the average interpreter).
b. (next to a line of poetry) Won't translate into Polish (for the average interpreter).[10]

(20) a. These books don't sell (*for the average shopkeeper).
b. These books won't sell for the average shopkeeper.

(21) a. (on shoe chest) Stows on floor or shelf (*for tidy people).
b. (on shoe chest) Should stow on floor or shelf for you.

Middle constructions are inherently involved with modality, but the use

9) It has been pointed out that modality and adverbials are closely related. Cf. Jackendoff (1972) and Cinque (1997). In particular, Cinque (1997) claims that adverbs like *well* are licensed by genericity. This opens the possibility that adverbials in middle constructions are associated with the generic operator.

10) Note that this tendency is observed in sentences with a verb which has an inherent I/M component like *translate*. An inherent I/M component does not guarantee a *for*-phrase.

of a modal auxiliary facilitates the occurrence of a *for*-phrase.[11] This fact implicates that the *for*-phrase is partly licensed by modality. One piece of evidence can be found in a control phenomenon when a passive is involved.

(22) a. *The books were sold without PRO reading them. (Chomsky, 1982; Williams, 1985)
b. These books can be sold without PRO reading them. (Chomsky, 1982; Williams 1985)
c. *The books might have been sold without PRO reading them. (Kratzer, 1991)

(22a) shows that the implicit argument of a passive does not control the PRO that follows, but (22b) is well-formed.[12] The only difference is the use of a modal auxiliary in root modality. This shows that root modality contributes to making the implicit argument salient as a controller.[13] (22c) also contains an modal auxiliary, but it is ungrammatical. The auxiliary verb in (22c) is used in epistemic modality.[14] This shows that only root

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11) It is generally believed that genericity involves modality. Cohen (1999) tries to dispute this claim. In Yeom (2002), I show that Cohen's claim is not convincing. At least, his evidence does not prove that genericity does not involve modality.

12) The implicit agent can control the subject of an infinitive rationale clause.

(i) The wall was painted to protect it against the rain.

This is adopted as an example which shows that the implied agent can control. It is, however, controversial whether the controller is the implied agent or the event argument. Williams (1985) and Lasnik (1985) are those who claim that it is the event argument.

13) Newmeyer (1970) points out that a passive with a root modality auxiliary does not change meaning when the internal argument is inanimate. This shows that the modal auxiliary takes the implied/*by*-phrase subject as its semantic subject.

(i) a. Visitors may pick flowers.
b. Flowers may be picked by visitors.

The two sentences have the same meaning, and permission is given to visitors in the passive too. This holds even when the *by*-phrase is not overtly expressed.

14) In general, modality can be distinguished between root and epistemic modalities. The distinction can apply to the modality of possibility too. Leech (1971) distinguishes factual and theoretical possibility. These are illustrated as follows:

(i) The road may be blocked. (factual possibility)
= It is possible that the road is blocked.
(ii) The road can be blocked. (theoretical possibility)
= It is possible for the road to be blocked.

Here factual possibility belongs to epistemic modality and theoretical possibility to root modality.

modality implies an argument. When it is combined with a predicate with an implied argument, it makes the implied argument more salient and active in syntactic phenomena.

Without an adverbial or a modal auxiliary, some middle sentences with a *for*-phrase improve when this contains the expression *any*.[15]

(23) a. (on shoe chest) Stows on floor or shelf (*for tidy people).
b. (on shoe chest) Stows on floor or shelf for anyone with half a brain.

(24) a. These books don't sell (*for the average shopkeeper).
b. These books don't sell for any shopkeeper.

Then why does *any* facilitate the use of the *for*-phrase? No one has ever given any explanation for this. A possible one may be that the expression also is closely related to modality. According to Kadmon and Landman (1993), free choice *any* is licensed by the generic operator. Middle constructions are assumed to have the generic operator, which will be discussed in detail below. But the occurrence of *any* seems to make the generic operator more salient or "stronger" enough to license a *for*-phrase because *any* requires the generic operator as its licenser. The point is that sometimes middle verbs alone may not be sufficient for the use of a *for*-phrase.[16] Even though the evidence we have seen so far does not directly lead to a conclusion, we can see that the implied agent is realized as a *for*-phrase, but that modality is one factor that licenses it. So I take a *for*-phrase in a middle construction to be an argument of the complex predicate formed by a middle and modality (or some head which licenses the generic operator). This allows us to explain why a *for*-phrase behaves like the implied agent: it is the implied agent

15) There are cases where *any* does not save *for*-phrases in middle constructions. The *for*-phrases in the following sentences are interpreted with different meanings than the implied agent.

(i) a. Smart bureaucrats don't bribe for anyone. (Stroik, 1999, p. 121)
b. Unwise bureaucrats will bribe for anyone.

The preposition *for* in these sentences seems to be construed as 'on behalf of' rather than as the implied agent.

16) Dayal (1998) claims that *any* is inherently modal. If this is correct, we can maintain that the use of a *for*-phrase is related to modality even if we cannot explain precisely how it is.

transferred from the argument structure of a middle verb to the complex predicate. Argument transfer will be expressed by coindexation.

This also allows us to explain why the external argument of a middle verb is not realized as a *by*-phrase, but as a *for*-phrase. In a complex predicate construction, the actual realization of an argument is determined by the upper predicate. The agent of a middle verb is not simply an agent for the complex predicate. The complex predicate expresses the disposition of the surface subject. And disposition is a matter of degree relative to the agent who is involved in the events in which the disposition is actually observed. That is why the agents are realized as *for*-phrases. From this account we can conclude that *for*-phrases play dual roles: a phrase of a point-of-view and one associated with the implied agent.

Stroik (1992, 1995, 1999) tries to show that a *for*-phrase is the direct realization of the external argument, by resorting to binding phenomena. Following Reinhart and Reuland's (1993) theory of reflexivity, which is given in (25), Stroik (1999) claims that a *for*-phrase is the realization of the external argument of a middle verb.

(25) Condition B:
A reflexive semantic predicate is reflexive-marked.

A semantic predicate consists of a predicate P and its arguments, and a predicate is reflexive if two of its arguments are coindexed. If a predicate is to be reflexive-marked, one of the coindexed arguments is a SELF-anaphor. One of the constructions which can test Condition B is a conjunction structure. An example of a middle construction is given in (26).

(26) a. Mary$_i$ photographs well for Max and *her$_i$/herself$_i$
b. (Mary photographs well for Max) & (Mary$_i$ photographs well *her$_i$/herself$_i$)

In (26a) the NP *Max and her/herself* as a whole can be an argument of the syntactic predicate *photograph*, but *her* or *herself* is not. But its semantic representation is like (26b), where *Mary* and *her/herself* are semantic co-arguments of the same predicate. So according to Condition B, the SELF-anaphor *herself* is the correct expression. But this is not absolute evidence for claiming that they are syntactic co-arguments, as

Stroik does. If a *for*-phrase is semantically associated with the external argument of the middle verb, which is what I am suggesting, the same result as in (26) will be obtained even if the *for*-phrase is not actually the direct realization of the external argument. The coindexation of a NP in a *for*-phrase with the surface subject has the effect of coindexing the implicit external argument with the surface subject and making the semantic predicate reflexive.

4. What Genericity Comes From?

Middle constructions are generic. I do not know of any attempt except Fagan (1988) to account for genericity of middle constructions. Following Rizzi's (1986) analysis of null objects in Italian, Fagan (1988) attempted to propose that a middle verb is derived by saturating the external argument, or giving it an arbitrary index in the lexicon. An arbitrary index means that the external argument is roughly understood as 'people in general'. This requires the middle verb to be generic. But this is not empirical supported. We can find examples in which the implied external argument is not 'people in general'. It is already mentioned that a *for*-phrase is indirectly associated with the external argument, and in (16) we have seen that the implied external argument can be a specific individual. They show that genericity in middle constructions cannot be attributed to the arbitrariness of the implied agent.

Then one could suggest that middles are inherently generic. If middle verbs were inherently generic, then they would be stative from the beginning. But middle verbs are different from other stative verbs.

First, a middle verb can take an agent-oriented adverb if the derived subject is a possible secondary Agent while a stative cannot.

(27) a. Harry seduces easily and willingly.[17] (Fellbaum, 1986)
b. *I know his name very well and willingly.

17) An agent-oriented adverb is possible only when it is used with an adverbial which can occur by itself with a middle verb. So the following sentence is ungrammatical.

(i) *Harry seduces willingly.

Roberts (1987) shows that a middle verb can be used with an agent-oriented adverb like *voluntarily* alone, but in that case the sentence shows all the properties of non-generic sentences.

Sentence (27a) expresses Harry's disposition, but the adverb *willingly* should be part of the disposition. Harry cannot, by his willingness, have the disposition of being seduced easily. So the agent-oriented adverb combines with the meaning of the verb *seduce* before the VP becomes a generic predicate. This shows that the middle verb is not inherently generic.

Second, middles are compatible with resultative secondary predicates, while statives are not.

(28) a. This bread cuts *into thin slices* easily.
b. *I like this bread *into thin slices*.

A resultative secondary predicate only combines with accomplishment verbs, not with statives, or inherently generic predicates, as shown in (28b).

Third, middle constructions are compatible with delimiting adverbials; statives are not:

(29) a. The seat belt could adjust in a moment.
b. This tent puts up in about two minutes.
c. This cereal prepares in your bowl instantly.

(30) ??I know his name in a moment.

The fact that resultatives and delimiting adverbials can be used in middle constructions implies that middle verbs are not generic themselves. A natural assumption is that there is a generic operator which makes the eventive predicate into a generic one.

Except for sentences with inherently generic predicates, which are generally called individual-level predicates, a generic sentence contains a generic operator which binds some variables within its scope. So a generic sentence has the following semantic structure:

(31) $\text{Gen}_{x_1,\ldots,x_n}[\ldots(x_1)\ldots(x_n)\ldots]\exists\, y_1,\ldots,y_m[\ldots(x_1)\ldots(x_n)\ldots(y_1)\ldots(y_m)\ldots]$

Here a variable x_i $(1 \leq i \leq n)$ can be an event variable introduced by a verb. If there is no bound variable, then the sentence is semantically an

anomaly. From this restriction on generic sentences, we can show that middles are not inherently generic.

Consider the following examples.

(32) a. The mayor bribes easily.
b. The letters transpose easily.
c. The floor paints nicely.
d. Harry seduces easily.

These sentences are fine because the event variables introduced by the verbs can be bound by the generic operator. For example, the rough semantic interpretation of (32a) is as follows:

(33) $\text{Gen}_s[m \text{ is in } s]\ \exists x[\text{bribe}(s)(m)(x) \wedge \text{easy}(s)]$

Here I assume that the definite NP denotes an individual. The verb *bribe* provides an event variable *s* which can be bound by the generic operator. Consider the following example.

(34) a. ??The mayor kills easily.
b. $\text{Gen}_s[m \text{ is in } s]\ \exists x[\text{kill}(s)(m)(x) \wedge \text{easy}(s)]$

(34b) is the semantic representation of (34a). Apparently (34b) seems fine, but actually the variable *s* is not bound by the generic operator because the death of an individual cannot be repeated. There is no other variable that the generic operator can practically bind. This makes the sentence odd. This shows that a middle verb is not inherently generic, as individual-level predicates are.

I have shown that a middle verb is non-generic and forms a non-generic VP with a delimiter or a resultative secondary predicate. On the other hand, some adjuncts in middle constructions are licensed by generic predicates. This implies that there is some larger generic phrase with some non-generic predicate inside. As van Oosten (1977) points out, rationale clauses in middle constructions must modify generic properties, not specific events.

(35) a. The clothes wash with no trouble because
(i) they are machine-washable.
(ii) (??)I have lots of time.
b. It is not trouble to wash the clothes because
(i) they're machine-washable.
(ii) I have lots of time.

(36) a. *The ceiling in this room touches easily because I have a tall ladder.
b. The ceiling in this room is easy to touch because I have a tall ladder.

In (35a) the reason must be given for the generic property of the clothes being washed with no trouble, not about a specific event of being washed with no trouble. (35b) is not a middle construction and allows a reason for a specific event of washing the clothes. The same explanation can be given to the difference of the two sentences in (36). Note that a *tough* construction, which is assumed to have a similar meaning to a middle construction, allows a reason for a specific event, unlike a middle construction.

I have claimed that a *for*-phrase is licensed by a complex predicate with modality. This means that a *for*-phrase is not an adjunct to the VP which denotes an instantaneous event, but one to a generic predicate, a larger constituent. This can be confirmed by scope relation. Consider the following sentence.

(37) No Latin text translates easily for Bill.

If the *for*-phrase were in the VP and part of the inherent disposition of Latin texts, this sentence would mean that there is no Latin text that has the (inherent) disposition of 'being translated easily by Bill'. The intended meaning, however, is that for Bill no Latin text shows the disposition of 'being translated easily'. The *for*-phrase is not part of the disposition. This requires the *for*-phrase to be somewhere above the VP. Here the implied agent is understood to be Bill, but this is not because the *for*-phrase is part of the disposition, but because the implied agent is coindexed with the NP in the *for*-phrase by argument transfer.

We can observe the same readings for the following sentence.

(38) These books don't sell for any shopkeeper.

If the *for*-phrase is within VP, the sentence is expected to have the reading (39a). If it is outside VP, then the sentence is expected to have the reading (39b).

(39) a. These books have the disposition of not being sold by any shopkeeper.
b. For no shopkeeper, these books sell (well).

Between these two readings, the second one is the meaning of sentence (38).[18] As the structure shows, the *for*-phrase is not part of the disposition expressed by the generic predicate, but expresses the point of view from which the generic property is considered. Even in this case the implied agent of selling is taken to be each shopkeeper.

The discussion so far shows that there should be two layers in terms of aspect. Middle verbs are not inherently generic. VPs with middle verbs denote specific events, and larger phrases are generic. Some modifiers are used for the non-generic predicates and others for the generic predicates. Non-generic predicates can become generic only with the help of the generic operator or the modality which has a similar meaning.

Then the next question is how the generic nature of middle constructions is ensured. How are non-generic predicates associated with the generic operator in a non-accidental way? I suggest that middle verbs are lexically derived by giving the event argument some feature, in addition to the suppression of the external argument, and that the feature is licensed by being associated with the generic operator in the syntax.[19] I will simply represent the feature as [ANY]. According to

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18) This can be given as a piece of evidence that the *for*-phrase is not the direct realization of the external argument. One thing I want to point out is that *any* NP is not licensed by the negation but by some other syntactic and semantic element like modality. We can find examples of middle constructions in which *any* comes with no negation.

(i) (on shoe chest) Stows on floor or shelf for anyone with half a brain.

19) A similar analysis is proposed for i(ndividual)-level predicates. Chierchia (1995) poses a problem with the idea that i-level predicates are inherently generic. Chierchia (1995) gives two examples to show this.

(i) a. Sheep are black or white.
b. Cats like themselves.

Sentence (ia) can be roughly paraphrased as follows:

Kadmon and Landman (1993), *any* CN is just an indefinite and so it is interpreted as the existential quantifier, but *any* has the effect of widening the domain for the interpretation of the NP. It is licensed only if the widening of the domain creates a stronger meaning. Then we could define the meaning of [ANY] as the effect of widening the domain for the existential quantifier. Free choice *any* is also subsumed under the same analysis. The only difference is that it is bound by the generic operator. Such a free choice interpretation is what is observed in middle constructions. So the feature [ANY] is just like the free choice *any*. In conclusion, middle formation involves two processes. The external argument is suppressed and the event argument is given the feature [ANY], which makes it bound by the generic operator. The feature itself does not make the verb generic.

Sometimes middle verbs may be used in non-generic readings. As I said, they are used as such because the event argument cannot be bound by the generic operator. If the feature [ANY] is not to be given to the event argument of a verb, it should be predicted in the lexicon. Note that the feature is assigned in the lexicon, and that exceptions can be predicted from the inherent meaning of the verbs. Whether or not the feature can be assigned to the event argument can be predicted in the lexicon. Even when the event argument is given the feature [ANY], it loses the force of free choice. In this case I am not sure what is the ultimate effect of the feature. I claimed that even when a middle verb denotes a simple event, that event occurs as a manifestation of an inherent property of the surface subject. This may be closely related to the assignment of the feature.

(ii) Every cat is black or white.

But if i-level predicates were inherently generic, the complex i-level predicate *black or white* would be roughly paraphrased as 'generally black or generally white'. Then the sentence would have the following reading.

(iii) Sheep are black or sheep are white.

To get the natural reading of the sentence, the generic operator must be introduced over the disjunction of the two i-level predicates and this disjunction must be predicated of each sheep. Similarly, sentence (ib) has the following meaning.

(iv) Gen $_{x,s}[x \leq_R \text{cats} \wedge C(x,s)][\text{like}(x,x,s)]$

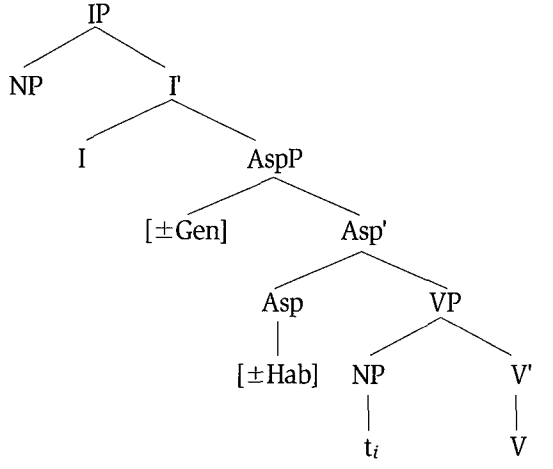
That is, to get the right reading, the generic operator must combine with the reflexive predicate. If the verb *like* is inherently generic, this reading is hard to get.

5. Analysis of Middle Constructions

5.1. Syntactic Structures of Middle Constructions

I will adopt a run-of-the-mill version of the Principles and Parameters framework, where S-structure is mapped into LF via Move-α. LF feeds into semantic interpretation. I assume that a sentence typically has the following structure:

(40)



I assume the VP-internal subject hypothesis, so the subject of a sentence occurs in the specifier position of VP and moves to the specifier position of IP. I also assume Asp(ectual) P(hrase) just above VP, following Tenny (1987) and Chierchia (1995). If the head is [+Hab(itual)], the sentence becomes generic with the generic operator at the specifier position of AspP.[20] The simple feature [+Hab] is not sufficient to express that middle

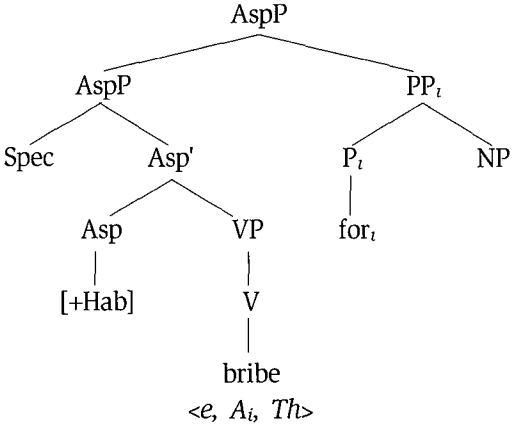
20) Cinque (1997) claims that this head carries a feature [±*progressive*]. Here [+*progressive*] is a marked value, and [-*progressive*] is taken to be generic. Genericity is in complementary distribution with progressive aspect. For this reason, Cinque suggests that genericity and progressive aspect head the same syntactic projection and that they differ with respect to the feature of that projection. Cinque assumes an additional phrase between AspP and VP, together with many other function categories related to various types of adverbials. Cinque basically assumes that adverbs are licensed in the specifier positions of separate functional maximal categories. Especially manner adverbials are assumed to occur in the Voic(e) P(hrase), which occurs just above VP. We know that middle constructions occur with manner adverbs like *easily, well, nicely, smoothly,* etc. But in English, middle voice is formed in the lexicon, so does not need a syntactic position for an overt morpheme of

constructions convey inherent properties of the surface subjects, it is not clear yet whether we need to assume different operators for different types of genericity, or whether the inherent properties are captured in some other way.

To interpret a middle construction which contains the generic operator between the IP and the VP, there should be a mapping rule from a syntactic structure to the semantic representation. I assume that the material outside the VP is mapped into the restrictor of the generic operator, and the rest into the nucleus scope. The subject can go into the nucleus scope if it is lowered to the specifier position of the VP, but middle constructions normally express the subjects' dispositions.

I assume that a *for*-phrase, which is indirectly associated with the implied agent, is assumed to be adjoined to the AspP because it is regarded as the argument of a complex predicate which consists of a (middle) verb and the generic feature in Asp.

(41)



Here the middle verb has three arguments <*e*, A(gent), Th(eme)>. The agent is suppressed, and so not realized within the VP. When the VP is combined with the feature [+Hab] in Asp, the agent is transferred to the complex predicate the syntactic head of which is the feature [+Hab]. The feature does not select an argument directly so the agent is realized as a *for*-phrase. The argument transfer is represented as a coindexation. The

middle voice. So I ignore VoicP.

reason for giving the index to P is just technical. This will be discussed below. Since a *for*-phrase is adjoined to AspP, it is always mapped into the restrictor of the generic operator.

5.2. Semantic Interpretation of Middle Constructions

In my analysis, the external argument of a middle is lexically saturated in the lexicon and is optionally realized as a *for*-phrase as an argument of the complex predicate. Once the implied agent is lexically suppressed, how is the agent bound by an overt argument? Syntactically this is an argument transfer. But this process must be explained semantically too. In addition, the implied agent can be specific when realized as a *for*-phrase with a proper name, but when there is no *for*-phrase, the implied agent is construed as 'people in general'. This should be explained in the interpretation of a middle construction. Another phenomenon that should be discussed in semantic interpretation of middle constructions is how the event argument is bound by the generic operator when it is given the feature [ANY]. If an event argument is given the feature [ANY] and if [ANY] is construed as the existential operator, it means that the argument is bound by the existential quantifier. If a variable bound by the existential quantifier is to be bound by another operator, the binding of the existential quantifier must be broken. This is what Dekker (1993) calls existential disclosure. In static semantics, existential disclosure cannot be captured. In this paper, I assume a slightly modified version of the Dynamic Montague Grammar (= DMG) because in this framework the correspondence between dynamic meaning and static meaning can be shown easily.

In a static theory of meaning, the basic types are e and t. In DMG, the basic types are $\varepsilon = \langle s, e \rangle$ and $\tau = \langle s, \langle\langle s, t\rangle, t\rangle\rangle$. For the dynamic meaning of a sentence, the up arrow is introduced as a type-shifting operation. It changes the meaning of an expression from a type expressed by e and t into a new type by replacing each e and t by ε and τ respectively. The $\uparrow\phi$ of a sentence ϕ is of type $\langle s, \langle\langle s, t\rangle, t\rangle\rangle$. If ϕ is true in state s, $\uparrow\phi$ denotes the set of all true propositions in s. If ϕ is false, then $\uparrow\phi$ is the empty set. From the dynamic interpretation of a sentence, we can get the truth-condition (= static content) of that sentence by the down arrow operator $\downarrow$, which is given in the Appendix. The meaning of type $\langle s, \alpha\rangle$ is a function from states (or, assignments) to the meanings of type α

with respect to each state. Each lexical item is associated with the meaning of a certain logical type. A sentence has the type of τ. I assume following Davidson (1967) and Parsons (1990) that all verbs have a situation argument, whether an event or a state. All 1-place predicates are of type $<\varepsilon, \tau>$. An NP has the semantic type of $<<\varepsilon, \tau>, \tau>$.

In DMG, expressions in natural language are translated into dynamic intensional logic (= DIL). In this language variables x, y, ... are distinguished from discourse referents d_1, d_2, ... Variables are used even though they are not actually used in discourse: they do not have counterparts in natural language. This language employs λ-abstraction and the dynamic counterparts of identity ($\cong$), 'be a realization of' relation ($\leq_R$), negation ($\sim$), and the existential quantifier (Ed).

Now let's see how a middle construction is interpreted within the DMG. The external argument of a middle verb is suppressed in the lexicon. Arguments like this are assumed to be existentially closed in the lexicon. This is not peculiar to middle verbs. Passives do not require the external arguments to be realized in the syntax, but the implicit arguments optionally occur as *by*-phrases. Suppose that a passive is compositionally interpreted. We do not know whether a *by*-phrase occurs at a higher node. The only way to interpret the verb is to assume first that the implicit argument is assumed to be someone or something given in the context. Later it is identified with the one introduced by an overt *by*-phrase. Dekker (1993) generalizes this into all optional arguments.

Now let's look at a concrete example.

(42) a. A captain whistles.
b. A captain of$_2$ the Enterprise whistles.

The common noun *captain* is relational, so basically it has two arguments. But in (42a) one optional argument is not realized, in which case it is assumed to be bound by the existential quantifier. This is represented as follows:

captain $\hookrightarrow \lambda x E d_2 \uparrow$ **captain_of**$(\uparrow d_2)(x)$

Even when we interpret (42b) compositionally, we must do the same thing with the noun *captain*, because we do not know if the optional argument is realized somewhere after the noun is interpreted. When the

optional argument is interpreted, it must bind the variable which has been bound by the existential operator. This is done by the process of existential disclosure given below:

(43) **Existential disclosure:**
$\{\uparrow x/d_i\}\Phi([\Phi_i\ ;\ (\uparrow x \cong \uparrow d_i)])$

Dekker (1993) takes this to be equivalent to $[\Phi_i\ ;\ (\uparrow x \cong \uparrow d_i)]$. This has the effect of replacing every instance of variable d_i with x. In (42b) existential disclosure applies when the preposition *of* is interpreted. Here the index 2 is given to the implicit argument of *captain* and the overt argument *of the Enterprise*. For a technical reason, the index is actually given to the preposition rather than the NP.

of $\hookrightarrow \lambda T\lambda P\lambda x \uparrow \downarrow T(\lambda y\{\uparrow y/d_2\}P(x))$
the Enterprise $\hookrightarrow \lambda Q\ Q(\uparrow$ **enterprise**$)$
captain of the Enterprise $\hookrightarrow \lambda T\lambda P\lambda x \uparrow \downarrow T(\lambda y\{\uparrow y/d_2\}P(x))$
$(\lambda Q\ Q(\uparrow$ **enterprise**$))(\lambda x Ed_2\ \uparrow$ **captain_of**$(\uparrow d_2)(x))$
$= \lambda x \uparrow \downarrow\{\uparrow$ **enterprise**$/\ d2\}Ed_2 \uparrow$ **captain_of**$(\uparrow d_2)(x)$
$= \lambda x \uparrow \downarrow[Ed_2 \uparrow$ **captain_of**$(\uparrow d_2)(x)\ ;\ \uparrow$ **enterprise** $\cong \uparrow d_2]$
(Existential disclosure)[21]

Here d_2 is bound by the existential operator, so the referent is not fixed, but it is equated with an individual 'the Enterprise'. So the existential operator loses its force as an operator.

A similar process is necessary in middle constructions. The event argument in a middle construction is given the feature [ANY]: that is, the event variable is bound by the existential quantifier. However, the event argument must be bound by the generic operator. So this is where existential disclosure comes in. Let's look at a concrete example.

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21) In this formula, the second d_2 is dynamically bound by the existential operator. It can be shown that the variable is statically bound using equivalence relations given in the Appendix:

$\lambda x \uparrow \downarrow Ed_2[\uparrow$ **captain_of** $(\uparrow d_2)(x)\ ;\ \uparrow$ **enterprise** $\cong \uparrow d_2]$ (associativity)
$= \lambda x \uparrow \downarrow Ed_2[\uparrow$ **captain_of** $(d_2)(\downarrow x)\ ;\ \uparrow(\downarrow \uparrow)$ **enterprise** $\cong \downarrow \uparrow d_2]]$ ($\uparrow$-export)
$= \lambda x \uparrow \exists d_2[($**captain_of** $(d_2)(\downarrow x) \wedge$ **enterprise** $\cong d_2)]$ ($\uparrow$-import)
$= \lambda x \uparrow ($**captain_of** $($**enterprise**$)(\downarrow x))$

(44) Harry **Gen** bribes easily.

For the interpretation of this sentence we need the following interpretation rule:

(45) $[_{IP} NP_i, \ldots XP_j \ \mathrm{Gen}_{i,j,l} \ [_{VP} \ldots]] \mapsto$
$G_{x_i, \ldots, x_j, x_l}[\ \| NP_i \| (\lambda y[\uparrow x_i \leq_R y])], \ldots; \| XP_j \| (\lambda y[\uparrow x_j \leq_R \uparrow y])$
$[\{\uparrow x_l / d_l\} \| VP \| (x_l)]$

The generic operator binds variables unselectively. The binding relations are expressed by coindexation in syntax. What the interpretation rule does is map the material within VP into the nucleus scope and that outside VP into the restrictor.[22] In the nucleus scope, $\{\uparrow x_l / d_l\}$ leads to the existential disclosure. This is what makes the event variable bound by the generic operator. The event variable is bound by the existential operator within VP. But existential disclosure replaces the existentially bound variable d_l with x_l, which is in turn bound by the generic operator. This makes the existential operator lose its force as a binder. Since the generic operator binds unselectively, it is very hard to derive the meaning of a sentence in a strictly compositional way. So the interpretation of the generic operator is given as a rule for an overall IP structure.[23] The subject NP may be a proper name, but it also may be an indefinite or a kind-denoting NP. To cover these cases, we need to assume that the subject NP is of type $\ll \varepsilon, \tau \gg, \tau \gg$. But an NP above the generic operator must be converted into a type of τ so that it becomes part of the restrictor with one or more variables bound by the generic operator. For this reason, $\lambda y[\uparrow x_i \leq_R \uparrow y]$ is given to the interpretation of the NP: we use the relation $\leq_R$ 'be a realization of' because the subject NP may quantify over individuals or kinds. Cf. Chierchia (1995). Let's look at the interpretation of (44):

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22) Diesing (1992) and Kratzer (1989) take a similar strategy for interpreting generic sentences with bare plurals.

23) The reason is that the generic operator cannot be given a fixed semantic type in this case. A normal type of an operator is $\ll \varepsilon, \tau \gg, \ll \varepsilon, \tau \gg, \tau \gg\gg$, but when the generic operator is of the same type and combines with a VP, it can take one predicate. But an NP is not a predicate. Even if it can take a predicate derived from one NP, it should combine other NPs, which is impossible. The interpretation rule for an overall IP structure can allow us to avoid this problem.

(46) *bribe* $\hookrightarrow \lambda x E d_i E d_j \uparrow$ **bribe** $(\uparrow d_i)(x)(\uparrow d_j)$
easily$_t$ $\hookrightarrow$ $\lambda P \lambda x[P(x)\ ;\ \uparrow]$ **easy** $(\uparrow d_i)]$
bribe easily $\hookrightarrow$ $\lambda x[Ed_iEd_j \uparrow$ **bribe** $(\uparrow d_i)(x)(\uparrow d_j)\ ;\ \uparrow$ **easy** $(\uparrow d_i)]$
Harry $\hookrightarrow$ $\lambda P\ P(\mathbf{h})$
Harry bribes easily $\hookrightarrow$
$G_{x_k, x_s}[\lambda P\ P(\mathbf{h})\ (\lambda y[\uparrow x_k \leq_R \uparrow y])]$
$[\{\uparrow x_s/d_l\}(\lambda x[Ed_lEd_j \uparrow$ **bribe** $(\uparrow d_l)(x)(\uparrow d_j)\ ;\ \uparrow$ **easy** $(\uparrow d_l)])(x_k)]$
$= G_{x_k, x_s}[\uparrow x_k \leq_R \uparrow \mathbf{h}][\{\uparrow x_s/d_l\}(Ed_lEd_j \uparrow$ **bribe** $(\uparrow d_l)(\mathbf{h})(\uparrow d_j);$
$\uparrow$ **easy** $(\uparrow d_l))]$ (λ −conversion)
$= G_{x_s}[C(\mathbf{h}, x_s)][Ed_lDd_j \uparrow$ **bribe** $(\uparrow d_l)(\mathrm{h})(\uparrow d_j);$
$\uparrow$ **easy** $(\uparrow d_l)\ ;\ \uparrow x_s \cong \uparrow d_l]$ (Existential disclosure)
$= G_{x_s}[C(\mathrm{h}), x_s][Ed_j \uparrow$ **bribe**$(\uparrow x_s)(\mathrm{h}) \uparrow d_j);\ \uparrow$ **easy**$(\uparrow x_s)]$

Here the value of the variable x_k is a realization of Harry. Then it becomes Harry itself. So it is not a variable any more. The variable for the event argument d_l is originally bound by the existential quantifier. But the existential disclosure $\{\uparrow x_s/d_l\}$ adds the formula $\uparrow x_s \cong \uparrow d_l$ at the end of the nucleus scope. This has the effect of replacing the variable d_l with x_s. And the latter is bound by the generic operator. Thus the variable originally bound by the existential quantifier gets bound by the generic operator indirectly.

In (46) I have ignored the effect of the feature [ANY]. As I pointed out above, a middle verb must be associated with the generic operator or some type of modality. I have proposed that the event argument of a middle verb is given the feature [ANY]. As Kadmon and Landman (1993) claimed, *any* has the effect of widening the domain of quantification beyond the contextually given set of relevant individuals. This is related to the notion of arbitrariness (Lee, 1996) or contextual vagueness (Dayal 1998). If a quantifier is to be interpreted in an extended context with a widened domain for the quantifier, it needs an operator which can introduce an extended context, other than the given context. This motivates the generic/modal operator to come in here. Especially in our analysis, the generic operator replaces the existential quantifier as the binder of the same variable, so the domain for the generic operator must be at least as large as that of the existential quantifier. Let's assume that the domain for a quantifier is defined by the context, and that C^* is the

widened context for the event variable. Then the existential disclosure in the interpretation of sentence (44) will be as follows:

bribe $\hookrightarrow$ $\lambda x Ed_i \in C * Ed_j \uparrow$ **bribe** $(\uparrow d_i)(x)(\uparrow d_j)$
Harry bribes easily $\hookrightarrow$
G_{x_k, x_s} $[\uparrow x_k \leq_R \uparrow \mathbf{h}][\{\uparrow x_s / d_i\}(Ed_i \in C * Ed_j \uparrow$ **bribe** $(\uparrow d_i)(\mathbf{h})(\uparrow d_j)$;
easy $(\uparrow d_i))]$
$= G_{x_s}[C(\mathrm{h}, x_s)][Ed_i \in C * Ed_j \uparrow$ **bribe**$(\uparrow d_i)(\mathbf{h})(\uparrow d_j)$;
easy $(\uparrow d_i]$; $\uparrow x_s \cong \uparrow d_i)$

Here $x_s \cong d_i$ can be satisfied if the domains for d_i and x_s are the same: the operator that binds x_s must be something that quantifies over individuals in the widened context. This is possible when x_s is bound by the generic operator, which can introduce individuals which are not given in the actual context. This is the reason why the feature [ANY] requires an operator like the generic operator.

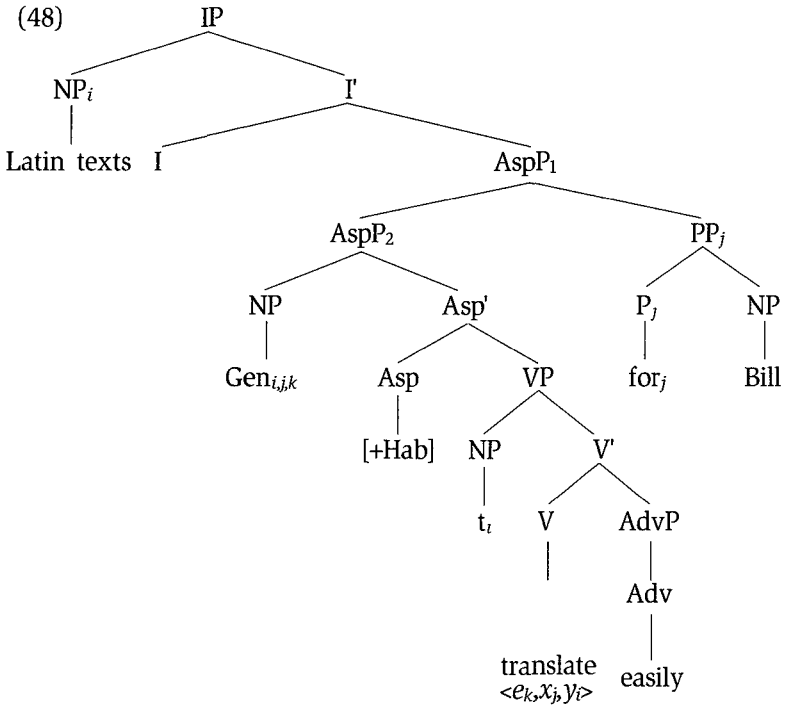
We know that the external argument is implied in middle constructions. The lexically saturated argument is semantically an argument bound by the existential quantifier. In (46) the external argument is still bound by the existential quantifier, but it does not mean that there is one particular agent involved in the event of bribing. There are multiple situations of bribing and for each situation there is an agent who bribes Harry. Since there is an unlimited number of situations, there can be an unlimited number of agents. This seems to be the reason why the agent is understood as 'people in general'. But note that the sentence is not about people in general. This makes it possible to get a middle construction in which the external argument is bound by a proper name.

Now let's see how the external argument is bound by a specific individual. One difficulty is that the overt argument in the form of a *for*-phrase is mapped into the restrictor and the implied agent is existentially closed in the nucleus scope. The two arguments are coindexed representing an argument transfer. When the *for*-phrase is added to the sentence, it is mapped into the restrictor and at the same time it must open up the previously existentially closed argument in the nucleus scope. Take a concrete example.

(47) Latin texts translate easily for Bill.

This sentence has the following structure:

(48)



Without the *for*-phrase, the sentence would have the meaning in (49a), and the addition of the *for*-phrase changes it into (49b).

(49) a. $G_{x_k, x_s}[\uparrow x_k \leq_R \uparrow$ **latin_texts** $\wedge C(x_k, x_s)]$
$[Ed_i \in C * Ed_j \uparrow$ **translate**$(\uparrow d_i)(x_k)(\uparrow d_j)$;
$\uparrow$ **easy**$(\uparrow d_i)$; $\uparrow x_s \cong \uparrow d_i]$

b. $G_{x_k, x_l, x_s}[\uparrow x_k \leq_R \uparrow$ **latin_texts** $\wedge \uparrow$ **point_of_view**$(x_l) \wedge C(x_k, x_l, x_s)$
$[Ed_i \in C * Ed_j \uparrow$ **translate**$(\uparrow d_i)(x_k)(\uparrow d_j)$;
$\uparrow$ **easy**$(\uparrow d_i)$; $\uparrow x_s \cong \uparrow d_i$; $\uparrow x_l = \uparrow d_j]$

In the interpretation, the meaning of *for* is simply expressed as a monadic predicate 'point_of_view'. The *for*-phrase introduces a variable x_l

which is bound by the generic operator in the restrictor, but it also introduces an equation $\uparrow x_l = \uparrow d_j$ in the nucleus scope. This is possible only when existential disclosure applies non-locally across the border between the restrictor and nucleus scope. This is not necessary only for the interpretation of a *for*-phrase. When a middle construction is interpreted, the event argument of a verb is existentially closed at the beginning. But later it is bound by the generic operator via existential disclosure. This is why $\{\uparrow x_l/d_l\}$ is in the interpretation rule in (45). To deal with a *for*-phrase, we need to modify the interpretation rule in (45) as follows:

(45') $[_{IP}\ \mathrm{Np}_{i,\ldots},\ \mathrm{XP}_j\ \mathrm{Gen}_{i,j,l}\ [_{VP}\ \ldots]] \hookrightarrow$

$G_{x_i,\ldots,x_j,x_l}[\ \|\ \mathrm{NP}_i\ \|\ (\lambda y[\uparrow x_i \leq_R y]),\ldots;\ \|\ \mathrm{XP}_j\ \|\ (\lambda y[\uparrow x_j \leq_R \uparrow y])]$

$[\{\uparrow x_i/d_i\}\{\uparrow x_j/d_j\}\{\uparrow x_l/d_l\}\ \|\ \mathrm{VP}\ \|\ (x_i)]$

I added $\{\uparrow x_i/d_i\}$ and $\{\uparrow x_j/d_j\}$ in the nucleus scope, generalizing existential disclosure to all variables bound by the generic operator. If a variable is not bound by an existential quantifier in the nucleus scope, existential disclosure applies vacuously, which does no harm. The new interpretation rule ensures the interpretation of (47) to be (49b).

6. Conclusion

In this paper, I have proposed that middle formation involves both lexical and syntactic processes. The suppression of the external argument occurs in the lexicon, but this is not sufficient to explain why middle constructions are generic. I propose another lexical process which assigns a feature [ANY] to the event argument. This must be associated with the generic operator in the syntax. I motivated this analysis by showing that a middle verb itself is not a generic predicate, and that it can combine with adverbials which occur only with non-generic predicates. I also showed that in a middle construction, the implied agent does not have to be people in general, as Fagan (1988) claimed. In showing this I propose that a *for*-phrase in a middle construction is an argument of a complex predicate. This can explain why the status of a *for*-phrase is controversial. It is associated with the implied agent by argument transfer. So it

behaves like the implied agent. On the other hand, it convey the meaning of 'point-of-view' because it is realized as an argument of a complex generic predicate which can be relativized to individuals.

This analysis poses difficulties in semantic interpretation of middle constructions. The feature [ANY], which is given to the event argument, can be interpreted as the existential quantifier, but the event argument must be bound by the generic operator in the syntax. A *for*-phrase is the implied agent which is existentially bound in the interpretation of a middle verb, but it must go into the restrictor of the generic operator and dynamically bind the existentially bound agent in the nucleus scope. This is dealt with by the notion of existential disclosure. Existential disclosure in this paper is non-local in some sense, but Dekker (1993) does not deal with cases like this. We need to find out how far existential disclosure can be extended in a future study.

Chierchia (1995) proposed a similar analysis of individual-level predicates as being bound by the generic operator somewhere outside. But one clear difference between individual-level predicates and middle verbs is that individual-level predicates are inherently generic while middle verbs are not. For this reason, he proposed that the generic operator be introduced at a strictly local position. But it is still to be explained why individual-level predicates are generic even before they combine with the operator. If my analysis is on the right track, inherently generic predicates seem to require a different analysis.

Appendix

Definitions for conversion from DMG into DIL:

1. (λ-conversion)
   $(\lambda x \beta)(\alpha) \Leftrightarrow [\alpha / x]\beta$ (provided all free variables in α are free for x in β)
   $([\alpha / x]\beta)$ is obtained by replacing all free occurrences of x in β by α.)
2. ($\uparrow$-export)
   $(\uparrow \beta)(\alpha) \Leftrightarrow \uparrow(\beta(\downarrow \alpha))$
   $\alpha \cong \beta \Leftrightarrow \uparrow(\downarrow \alpha - \downarrow \beta)$
   $\sim \Phi \Leftrightarrow \uparrow \neg \downarrow \Phi$

3. ($\downarrow$-import)
   $\downarrow \uparrow \phi \Leftrightarrow \phi$
   $\downarrow Ed\Phi \Leftrightarrow \exists d \downarrow \Phi$
   $\downarrow[\uparrow \phi;\Psi] \Leftrightarrow (\uparrow \downarrow \phi \wedge \downarrow \Psi)$
4. (associativity)
   $[Ed\Phi;\ \Psi] \Leftrightarrow Ed[\Phi;\ \Psi]$
   $[[\Phi;\ \Psi];\ \Gamma] \Leftrightarrow [\Phi;\ [\Psi;\ \Gamma]]$

References

Ackema, P. and M. Schoorlemmer. (1994). The middle construction and the syntax-semantic interface. *Lingua* 93, 59-90.

Ackema, P., and M. Schoorlemmer. (1995). Middles and nonmovement. *Linguistic Inquiry* 26, 173-197.

Chierchia, G. (1995). Individual-level predicates as inherent generics. In G. N. Carlson and F. J. Pelletier, eds., *The Generic Book*. The University of Chicago Press.

Chomsky, N. (1982). *Some Concepts and Consequences of the Theory of Government and Binding*. Linguistic Inquiry Monographs 6. Cambridge: MIT Press.

Cinque, G. (1997). *Adverbs and Function Heads: A Cross- linguistic Perspective*. Oxford University Press.

Davidson, D. (1967). The logical form of action sentences. In N. Rescher, ed., *The Logic of Decision and Action* (pp. 81-95). University of Pittsburgh Press, .

Dayal, V. (1998). *Any* as inherently modal. *Linguistics and Philosophy* 21, 433-476.

Dekker, P. (1993). Existential disclosure. *Linguistics and Philosophy* 16, 561-588.

Fagan, S. (1988). The English middle. *Linguistic Inquiry* 19, 181-203.

Fagan, S. (1992). *The Syntax and Semantics of Middle Constructions*. Cambridge: Cambridge University Press.

Fellbaum, C. (1986). On the middle construction in English. *Syntax and Semantics* 20. IULC.

Groenendijk, J., and M. Stokhof. (1990). Dynamic Montague grammar. In L. Kálmán and L. Pólos, eds., *Papers from the Second Symposium on Logic and Language* (pp. 3-48). Akadémiai Kiadó, Budapest.

Hoekstra, T., and I. Roberts. (1993). Middle constructions in Dutch and English. In Eric Reuland and Werner Abraham eds., *Knowledge and Language.* Vol. 2: *Lexical and Conceptual Structure* (pp. 183-220). Dordrecht: Kluwer.

Iwata, S. (1999). On the status of an implicit arguments in middles. *Journal of Linguistics* 35, 527-553.

Kadmon, N., and F. Landman. (1993). 'Any'. *Linguistics and Philosophy* 16, 353-422.

Keyser, S. J., and T. Roeper. (1984). On the middle and ergative constructions in English. *Linguistic Inquiry* 15, 381-416.

Kratzer, A. (1991). Modality. In A. van Stechow and D. Wunderlich, eds., *Semantics: An International Handbook of Comtemporary Research.* Berlin: de Gruyter.

Larson, R. (1988). On the double object construction. *Linguistic Inquiry* 19, 335-391.

Lasnik, H. (1985). Random thoughts on implicit arguments. ms. University of Connecticut/MIT.

Lee, C. (1996). Negative polarity items in English and Korean. *Language Sciences* 18, 505-23.

Newmeyer, F. J. (1970). The "Root Modal": Can it be transitive? In *Festschrift for Robert B. Lees.* Linguistic Research, Inc.

Parson, T. (1990). *Events in the Semantics of English.* Cambridge: MIT Press.

Rapoport, T. R. (1999). The English middle and agentivity. *Linguistic Inquiry* 30, 147-155.

Rizzi, L. (1986). Null objects in Italian and the theory of pro. *Linguistic Inquiry* 17, 501-557.

Roberts, I. (1987). *The Representation of Implicit and Dethematized Subjects.* Dordrecht: Foris.

Stroik, T. (1992). Middles and movement. *Linguistic Inquiry* 24, 127-137.

Stroik, T. (1995). On middle formation: A reply to Zribi-Hertz. *Linguistic Inquiry* 26, 165-171.

Stroik, T. (1999). Middles and reflexivity. *Linguistic Inquiry* 30, 119-131.

Tenny, C. L. (1987). *Grammaticalizing Aspect and Affectedness.* Unpublished doctoral dissertation. MIT.

Williams, E. (1985). PRO and the subject of NP. *Natural Language and Linguistic Theory* 3(3), 297-315.

Yeom, J.-I. (1989). Middle construction in English. Unpublished master's

thesis. Seoul National University.
Yeom, J.-I. (2002). Reasoning with generics based on truth-conditional semantics. *Language Research* 38, 585-617.
Zribi-Hertz, A. (1989). Anaphor binding and narrative point of view: English reflexive pronouns in sentence and discourse. *Language* 65, 695-727.
Zribi-Hertz, A. (1993). On Stroik's analysis of English middle constructions. *Linguistic Inquiry* 24, 583-589.

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